U.S. Environmental Protection Agency
Science Advisory Board
Metals Assessment Panel
Final Approved Minutes of Public Conference Call Meeting August 15, 2002

Committee: Metals Assessment Panel of the U.S. Environmental Protection Agency's Science Advisory Board (SAB). (See attached Roster)

Date and Time: August 15, 2002 from 2-4 Eastern Time (See attached Federal Register Notice)

Location: Science Advisory Board, Room 6013, Ariel Rios North, 1200 Pennsylvania Ave, Washington D.C.

Purpose: Three conference call meetings, including this one, were announced in 67 FEDERAL REGISTER, Number 46505-46506, July 15, 2002. The purpose of this public teleconference meeting is to: (a) Hear invited presentations; (b) to hear public comment; (c) to provide an opportunity for panel discussion; and (d) to identify areas where the Panel would welcome additional input. At this meeting the Committee. No time for public comment was requested as of 5 p.m. Wednesday August 14; the official deadline for requesting time for public comment was noon Thursday August 8.

Materials Available: In addition to materials provided before or at the August 8, 2002 conference call of the panel, the panel received:

1. the agenda for the meeting
2. a report from John Maney as a supplement to his presentation
3. a paper from Bill Adams as a supplement to his presentation
4. slides from Bill Adams to be used in his presentation

NOTE: The review materials are all posted at the Risk Assessment Forum Website (http://cfpub.epa.gov/ncea/raf/rafpub/cfm?ActType=default). They include the draft Metals Action Plan, five public comments on the Action Plan, and the summary of a meeting held February 20, 2002. As of August 15, 2002, the SAB itself has received no additional written public comments for the review.

The announcements for the meetings, agendas, hand-outs distributed at the meetings, and biosketches for the panelists can be found at the Science Advisory Board's website (http://www.epa.gov/sab/metalspanel.html)

Attendees:

Present on the Phone:

Panel: Drs: Thomas, Friedland, Fowler, Hayes, O'Rourke, Pittinger, Tran, Weis, Windom. Dr. Costa could not participate.
(Affiliations can be found on the attached roster)

Speakers: Drs. Luoma, Adams, Needleman, Hamilton, Maney
(Affiliations can be found on the attached agenda)

EPA Staff: Steve DeVito (OEI/OIAA/TRIPD) , Mike Dusetzina (OAR/OAQPS/ESD), David Mount (ORD/NHEERL-RTP/ADE) and Marc Stifelman (Region 10/OEA)

Members of the Public: Bill Allen of the Color Pigments Manufacturers Association; Mario Gamboa of the American Chemistry Council; Andrew Green of ILZRO; Neil King of Wilmer, Cutler & Pickering; Tessa Long of Great Lakes Chemical Corporation; Jane Luxton of King and Spalding; Meredith Preston of BNA; Rob Reash of American Electric Power (representing the Utility Water Act Group; Neil Shah of Risk Policy Report; Ann Smith-Reiser of Analytical Services, Inc. (a DOE contractor)

Feds: Bill Aljoe (DOE), Kevin Bromberg (SBA), and Debra Littleton (DOE)

Present in the Room:

SAB Staff: Kathleen White, Zisa Lubarov-Walton and Robert Flaak

EPA Staff: Bill Wood (ORD/NCEA/IO), Nancy Wentworth(OEI/QS), Karen Martin (OAR/OAQPS)

Public: John Arnett of the Copper & Brass Fabricatiors Council, Inc. and Steve Gurney of NRDC

Summary

The chair, Dr. Valerie Thomas, began by saying that today's call includes presentations by scientists that would be useful for the Panel. The speakers were not chosen because their views are those of the panel or because the speakers views must be influential in the report. Speaking time is short and she hopes speakers will leave some time for questions. Written materials from the speakers would be most welcome.

2:10 Invited Speakers

1. **Sam Luoma** addressed, "Why what this panel is doing is important?" using his Cal Fed Experience and some examples. (NOTE: All speakers were offered the opportunity to edit and correct the draft minutes of their presentation. As of September 19, Dr. Luoma has not been able to do so. Therefore, this section of the minutes may contain errors despite the best efforts of the DFO.)

Dr. Luoma indicated that the most important thing a panel like this can do is help regulators understand the bounds of scientific knowledge. After asking, “Are there things we know about metals that regulations outside those boundaries would make no sense?”, he responded that we do know some things. We know that metals can effect the environment. We know it is difficult to predict those effects. The most common errors are in the European debate which confuse hazard and risk. We know metals effects are very site-specific and very metal-specific. The uncertainties are large.

Scientific panels have their most influence when they can reach consensus and consensus can often be reached on bioavailability, exposure routes, mechanisms resulting in toxicity and the things that cause metals to be site-specific.

The panel could address what we need to learn next so the next round of regulations can be better. Some things have not worked in the past with regard to single number and single simplification factors. The best example is concentration factors. This varies widely among metals.

When asked about confusion of risk and hazard in the European debate, Luoma responded his understanding was from word of mouth accounts rather than direct experience. There are some forms of metals in waste dumps and such where the form (like copper sheathing) can be very stable which means flux is very small.

Up to this point we have had to be at very simplified single number regulations, but we need to move on from that. For example, in theory, concentration factors should be a constant, but they aren’t for some organisms and some metals. We know concentration factors are affected by bioavailability and the range is about 50-fold for a single organism. Among organisms it can be even greater. This is not a good way to get at exposure. Models may be better.

Panelists working on complex mixtures at Superfund sites asked for Luoma's thoughts on synergism. He responded that this is an area where the Panel could help EPA a great deal by saying what we need to know about mixtures. Where is the evidence contradictory? What are the uncertainties? Where should we go next? How do we get there? One panelist observed that there useful information on joint effects in the nutrition literature. Luoma noted he is more familiar with ecological literature

A panelist asked about a NOAA initiative using an approach developed by Long and Morgan (1990) Basically this is a "weight of evidence approach" using co-occurring sediment contamination and biological effects data from areas which exhibit pollution gradients to develop effects range for contaminant concentrations. It's a statistical approach using real data to assess at what contaminant concentration biological effects probably will occur. Philosophically this approach, using data from the environment, is different from EPA's which tends to depend more on models based on laboratory experiments. The panelist expressed concern that EPA is going one way while NOAA wants to go another. In providing reaction to NOAA’s weight of evidence approach to coming at hazard profiles, Luoma noted that we all know the limits to the NOAA

approach. It has been widely discussed -- for example, there is no consideration of bioavailability. The NOAA approach helps establish a window of concern. We need to resolve why there is such disagreement about these windows for sediments. Not to be ignored, but also not gospel.

A panelist agreed that the best available science should be used and if we know that factors such as speciation and salinity are important, they should be considered. He noted that the trouble with the bioconcentration approach is that you don't know the compartments and ignore multi-element exposure situations which can mis-lead you. Luoma added that it is really difficult to know when to incorporate new knowledge into the regulatory structure. If too fast and too soon, it creates chaos. In NRC committee discussion they thought it would be good for EPA to pilot regulations at a bay or state level and study not only the scientific aspects of implementation but the social aspects to allow

A panelist asked about simple numbers leading to danger -- in the context of a cross-Agency document that would characterize both health and eco assessments. Luoma noted that, given our legal structure he is not so naive as to think we won't end up with some single number approaches. In the Bay area, they are working with refineries on selenium using a single number plus narrative approach. The panel might recommend something to the Agency that would allow EPA to develop site-specific approaches.

2:30 **Bill Adams** (see his handout of nine slides and the paper he provided electronically and posted at the SAB's website)

Adams noted that most of the international discussion has focused on hazard. While in the US the PBT approach has been used to identify chemicals of concern, internationally it seems to have identified them for elimination. Canada uses PB&T. The European Union uses PB&T for organics to determine which need assessments. Since 1992 OECD has been concerned with harmonization and focuses on T (toxicity) which can be modified by B&P.

From 1997 to 2002, there have been a number of international workshops on metals. At these workshop almost all of the international discussion has been focused on hazard, not on exposure. It has also focused on screening, which does not get into the physical-chemical properties of the materials.

The EPA Waste Minimization Prioritization Tool is a scoring tool, incorporating a human health risk potential score and an ecological risk potential tool. If you look at it from the metals perspective only (not the broader approach the Agency took) you see that because metals persist they will automatically get a high score for P. For B, the Log KOW measure chosen doesn't work well for metals. This factor is determined by dividing the concentration in an aquatic organism by that in the water, so it doesn't relate to humans and, for the reasons Luoma gave, it doesn't work well for aquatic organisms for metals. For example, the cleanest environments have the highest

bioaccumulation factors because organism require essential elements for survival and/or due to kinetic limitations on uptake. (See his slides on bioaccumulation.)

There are different levels at which a metal assessment could be performed from screening level to definitive risk assessments. His slide includes some. Bioaccumulation is an indicator of concern, but there are problems with the use of bioconcentration factors. Bioavailability and speciation are important as well as PB&T and he suggested some tools that could get at these five factors.

EPA, Industry and Academia are convening a workshop under the umbrella of the Society of Toxicology and Chemistry with the view of stating what the best science is and how we can go forward with it. He hopes this will provide useful information to EPA, particularly in the development of the framework and guidelines.

In summary, there's a long history of using PBT to address hazard, but not risk. To a large extent, the focus has not been on lead and he doesn't think it should be because from an environmental perspective it behaves much like other metals. We want to develop a framework comprehensive for all metals.

In response to a panelist question about EU alternative process, Adams indicated that he believes it is in the beginning phases and doesn't know about collaboration between EPA and the EU. In developing the SETAC workshop, they have involved several people from EU, including regulators.

Another panelist noted that the question of persistence comes up a lot when there is an effort to slice metals the way we do organics. It becomes very abstract and may be fruitless to pursue because half-lives of the toxic form may not be what is relevant. We can't measure the species well. The best we can do is measure half-lives of various species under ideal conditions which do not resemble the complexity and variability in the real world. Do you think P gets us anywhere? Adams agreed there is not a persistence meter, so we have to use surrogates as we do on the organic side. Given the state of the science it is hard to say these are the absolute measures we would want to take to come up with a P surrogate. One the other hand, modeling the field data and building decent predictive model shows some promise.

Another panelist discussed approaches to looking at concentration in the environment and values of getting measurements from tissue. Adams responded that he comes from ecological side and just finished a workshop on dietary uptake of metals. The best data sets are probably mercury and selenium which are incorporated as an organic form of the metal. Having looked at criteria that could be used for whole fish or organ specific concentrations as predictors of effect, it appears this approach would work for mercury and selenium. There is on-going discussion of whether other metals could be dealt with in the same manner, which would be the ideal because it gives you a biomarker for effects.

2:55 **Herbert Needleman**

Lead is the best studied neurotoxicant and has been known as a toxin for over 2000 years. He knows childhood lead poisoning the best, and will focus on that.

Lead poisoning in children was first described in Australia over a hundred years ago. At first people thought that either children died or survived. It wasn't until about the 1950s when physicians discovered there were long term consequences of exposure but it was thought you had to have visible damage to the brain to have long term consequences. A blood level of 60 micrograms per deciliter was set as the criterion of lead poisoning.

Over time, studies of elevated levels in the absence of symptoms showed exposure is associated with decreased IQ and other effects and the blood lead levels associated with medical concern were lowered repeatedly. IQ is popular because it has a number attached to it and has cache. IQ consists of 12 sub-tests. We now know IQ is neither the most sensitive nor most important outcome.

Now we are in a later chapter. We are recognizing the social costs not just to the individual, but to society. Randy Beyers studied the long term effects of lead because of reports that two lead poisoned patients who attacked their teachers. There are now 4-5 papers (2 ecologic; 3 epidemiologic) on lead and crime rates. The study Needleman conducted and knows best shows an odds ratio of 4 after control of confounders. Knowing the average blood lead at the time these people were born, they estimate the population attributable risk for lead-associated delinquency as ranging from 11 to 38%.

Cost benefit analysis by CDC and Joel Schwarz monetized the benefits to a single cohort of children, who if not for public health measures to reduce lead exposure of children, would have had a mean blood lead of 15 micrograms per deciliter of blood when the actual was 2-3. From this reduction in blood lead, they estimated the increased IQ and from IQ estimated increase in income to that group of 4 million children. The benefit to this cohort ranged from 118 to 300 billion dollars.

A panelist summarized as follows, "What you are telling us is that you have to look at a whole chain of outcomes, not just one." Needleman agreed and noted that it may be that the outcome that is under the light may not be the most important one. For example, although mothers had told doctors for years that after their child was changed after he was lead poisoned -- that he became more aggressive and difficult to handle-- the scientific studies demonstrating this were not done until much later. Also, with better studies, larger populations, you find results at lower and lower levels. Recent findings have reported lead effects well below 10 mcg/dl.

A panelist noted that another point for the panel that Needleman is bringing up is populations of special risk. Here we are getting individuals who are responding even though average blood lead is dropping. We will take up population at risk and endpoints. This is consistent with the discussion we had with Luoma about putting in

the best science and include at least a narrative statement saying we thought about it. Needleman cautioned that -- because some people think that because poor and black people generally have more exposure -- white and privileged people don't have these problems. They can and do.

A panelist asked, "Are exposure pathways assumed in these studies?" Needleman responded that, for lead in children, the two big pathways were paint and atmospheric lead. (I missed some of this discussion of two kinds of "ecological" studies because people came into the room)

3:10 **Joshua Hamilton**

Overall, he found the draft document to be very good. It framed the questions very appropriately and he wanted to specifically endorse page 5 for laying out the basic issues. If one could reach those objectives that would be ideal, even moving in that direction would be beneficial.

As has been pointed out, metals are different from organics in terms of their toxicology in almost all respects. It is difficult to plug metals into models developed for organics and hope they work. Also, each metal is unique. They are as different from each other as any two organics. While there is utility to looking at them collectively, as in this document, scientifically we have to look at them differently and develop tailored risk assessments.

Many metals of concern in the environment are essential at small doses or mimic / substitute for essential ones (chemically, not biologically) in biological systems.

Metals can also act in concert with organic chemicals in ways that aren't obvious. Arsenic, for example, is not overtly genotoxic, but BAP, for example is more genotoxic and mutagenic in the presence of arsenic than by itself. It will be important to consider binary, ternary and higher combinations in order to model real life exposures where multiple agents are typically encountered. Models based on a single metal in isolation may not be relevant.

Bioaccumulation v biomagnification are different issues. Bioaccumulation is within the individual whereas biomagnification is from one trophic level to another. The Action Plan could be more clear about this and should consider this in more depth. Some metals do one and not the other and some do neither. Mercury is an example of one that does both; as a result, mercury in water is not a good predictor of mercury in the highest trophic level. One must know the structure of the food web to predict the level of biomagnification. Ironically, some of the lowest levels in fish come from the most polluted waters because of the structure of the food web, whereas pristine lakes with no measureable water mercury can have the highest levels in fish people eat.

Route of exposure is very important even when we understand the valence and physical form of the metal. An example is chromium where inhalation, digestion and dermal are

the three traditional routes of exposure but only one, inhalation, is associated with cancer. Similarly, there is little or no dermal uptake of arsenic from water or soil. Understanding that and having a model that incorporates route of exposure for it is important.

The chemical and physical form of metals is critical to how it will behave. He gave chromium as an example. The 2.5 um or less particulate forms can be breathed as a dusts into the deep lung, increasing lung cancer risk under high dose settings. But chromium dissolved in water and inhaled as a mist or in droplets does not have the same risk even though it is the same chemical form.

Dose is also important in unexpected ways. In their studies at Dartmouth, they were surprised to see that a low dose causing no overt toxicity can have completely different biological effects -- measured in this case as genes responding on a large gene array -- than a moderate or high dose that causes some cytotoxicity and which altered an almost completely non-overlapping set of genes. Similar results have been seen with low vs. high dose experiments for other molecular endpoints, suggesting that high doses cannot accurately predict biological response to low doses and vice versa, as if they were two different chemicals.

He had some specific comments about the document. He endorses the Physiologically Based Pharmaco-Kinetic (PBPK) approach for understanding how humans and terrestrial animals handle metals. The challenge is to bridge this information with the ecological information. A model in environmental species that mimicks this would be good - there are concerns about the "biotic ligand model" being able to fulfill these needs or accurately modeling metals behavior in aquatic species. He thinks there are needs to be accurate models for how metals move through organisms at both levels, and a bridging of the two systems.

On page 17 of the draft Metals Action Plan, there is a brief discussion about "background levels" which are important to consider for metals. Sometimes the concept of background gets thrown on its ear. For example, when arsenic is disposed of on top of natural arsenic containing rock -- how do you remediate it, and to what level? Finally, sentence on page 8 alarms him, "Atmospheric chromium plus 6 is a known human carcinogen." All information on chrome 6 comes from occupational studies which increase respiratory risk. There is no information at this point that chrome 6 in the environment is a human carcinogen, and this sentence, as written, implies this. It should be re-worded.

A panelist asked, "How much data is out there for adequate PBPK analyses for metals?" Hamilton responded that it depends on the metal. More experimentation will need to be done. Sometimes it is more important to try to build a model and use it to define the data gaps. It is pretty easy for chromium and arsenic where the half life in the body is shorter and well described and harder for metals like lead and mercury which are stored in complex ways in the body.

Another panelist reflected that it sounds like you are talking about biological and pharmacological models, not environmental models and Hamilton responded that you can include the latter.

3:30 **John Maney** referred to the short paper he wrote on the Agency's Quality Sustem (QS) and the Office of Management and Budget (OMB) information quality guidelines as they apply to the Metals Action Plan (MAP). (This paper is posted at the SAB's website) These apply much more broadly of course, but they do apply to the products of the guidance. These are his findings, not EPA's or the panel. He also sent me the following notes of his presentation.

- As stated in the paper the EPA recognized that "Quality" is an attribute that is independent of production pressures such as scheduling and budget constraints.

- Therefore the EPA established a Quality System, which is removed from these production pressures, so it can make impartial and objective decisions and evaluations regarding the quality of the Agency's services and products.

- Application of the Quality System is not optional. Compliance with the Quality system is specified in an Agency Directive and the Agency's Quality Manual. The Quality System as described in these documents is applicable to metal risk assessments.

- The OMB guidelines on information quality are also applicable and have a strong focus on risk information and its quality.

- In fact, these guidelines have singled out risk information and established the most rigorous quality standards for risks -- that is risks to human health, safety and the environment.

- These quality guidelines are not only applicable to the EPA, but are also applicable to all members of the regulated community who submit information to the EPA with the intention of influencing Agency decisions.

- In the final analysis, compliance or noncompliance of a risk assessment with these OMB guidelines is likely to impact whether the EPA will be able to use a risk assessment in rule-making or policy-making.[1]

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[1] After reviewing the draft minutes an EPA staff member provided the following view, not provided at the meeting, but still relevant. The OMB Guidelines serve as a basis from which each federal agency is required to develop its own guidelines. EPA is in the process of developing its own Information Quality Guidelines, and it is those Guidelines that will be applicable to any information product disseminated by EPA after October 1 (which is the statutory deadline for having the guidelines completed). In many ways the draft EPA guidelines track the OMB guidelines, but in some ways they are different. The website for EPA's guidelines is

Reviewing the MAP and the proposed Framework and Guidance documents in terms of the Quality System and the OMB Guidelines, the following positions are made;

- The EPA's response to the OMB guidelines needs to be understood and reflected in the metals risk assessment documents.

- The guidance documents should emphasize the need to properly document the entire risk assessment process, such that it is transparent enough to be reproduced by a second or third party.

- The Agency's goals and the intended audience for the proposed documents need to be clearly identified for the Subcommittee to evaluate the MAP.

- The Metals Action Plan failed to address Quality issues. Fifteen examples are listed in the report.

- The Framework and Guidance documents are going to discuss the use of models, yet the MAP did not address how the applicability of these models will be evaluated.

- The role of the Agency's Quality System should be emphasized in the framework and guidance documents

- The agency should focus not only on precision, but all errors that can impact the accuracy of decisions. – For example source data or physical constants that can be in biased by orders of magnitude.

- The Agency has had great success in applying systematic planning processes to complex multi-disciplinary projects. It would be advantageous if the Metals Risk assessment Framework and guidance documents promoted a systematic approach to planning and the use of Quality Assurance Project Plans.

- Since the proposed documents are implementation documents and not policy, it is necessary that the documents assign authority and responsibility for application of the Quality System to risk assessments. Experience tells us that in large organizations, if responsibilities are not assigned - tasks will not be undertaken.

In summary, the Agency should be applauded for its cross-agency approach to metals risk assessment. It is obvious that those driving this process have a clear appreciation for Quality issues. However, if the proposed documents do not identify quality issues and assign responsibilities ---- then it is certain that the quality of risk assessments will vary across the agency and from risk assessment to risk assessment.

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http://www.epa.gov/oei/qualityguidelines/.

Dr. Thomas and the DFO asked Agency staff familiar with the Quality System and the OMB Guidelines to comment. Nancy Wentworth, Director of the Quality Staff in the Office of Environmental Information noted that because of the diversity of chemicals and effects within metals (as discussed by previous speakers), there really does need to be systematic planning to take this into consideration up front. This would strengthen the results. Also, there is now more expectation of access to documentation about decisions and planning for this from the beginning. Karen Martin of the Office of Air Quality Planning and Standards seconded Wentworth and reacted to Maney's statement that "level of quality might not be the same" She noted that the level of quality does not have to be the same as long as the quality is understood, transparent, etc. The best available will not be the same across the science. Wentworth noted that Martin's statement reinforced Maney's comment on the benefits of systematic planning.

Maney agree whole-heartedly with Martin and noted that he had intended to say that, if you don't use a QS, the results may not be adequate for the intended use.

A panelist asked, "What does quality mean in the regulatory framework?" Maney responded that Quality is measured in terms of the user of the product. For example, is the quality adequate to set a standard? If you don't have a quality standard in place, you may not end up there. Consider the example in his hand-out where factors varied by orders of magnitude. Wentworth supplemented this using an enforcement example. Her staff found a model which looked good but had a line in the middle that basically said, "If it looks like this will be a problem, put in 2.4" The strength of the QS is embedded in the scientific framework. You need to know what you are going to do and how good it has to be. Working in that framework allows you to identify the most sensitive parts of the framework or the areas where we have the least data to see how far you can go. A major part is documentation that would allow others to use the same data if it is suitable for their use.

3:45 The chair thanked speakers, Martin and Wentworth

The chair noted that, for the August 29 conference call, the plan is that panelists will write their first draft comments. At the last conference call all panelists have been assigned to charge questions. She would like all panelists to write a draft which they would present on the phone. All panelists are welcome, encouraged and expected to provide comments on other questions. It is also possible that you will have comments that do not obviously fit under any of the questions.

On the 29th she will start with question #1, calling on the lead first, then the other assigned panelists, then the other panelists, then go to question #2 and so on. If you can get your work done early, email your comment to the lead for the question with a copy for the DFO to permit some integration before the 29th. No questions from panelists.

She then invited questions from people not on the panel. One asked whether

Hamilton was still on the phone so he could alleviate confusion. The speaker thought he heard Hamilton say that he didn't think we could use models developed for organics, but endorsed PBPK approach which he thought was developed organics. A panelist said that PBPK models exist for metals

Bill Wood of EPA noted that at the last meeting there was a request that the Agency speak a bit more about approaches the Agency uses in different programs which they would be willing to do at next call. [Note from DFO: After the conference call, this presentation has been rescheduled for the face-to-face meeting.]

The chair asked for any more questions and, getting none, expressed her thanks and adjourned the meeting at 3:50.

Respectfully Submitted:	Certified as True:
/Signed/	***/Signed/***
_____	_____
Ms. Kathleen Conway Designated Federal Official Environmental Engineering Committee	Dr. Valerie Thomas, Chair

Electronic Attachments

1. Federal Register notice
2. Agenda for the meeting
3. Committee roster

Paper Attachments

4. a report from John Maney as a supplement to his presentation
5. a paper from Bill Adams as a supplement to his presentation
6. slides from Bill Adams to be used in his presentation
7. email approving these minutes

Attachment 1 Federal Register notice

EPA Science Advisory Board, Notification of Public Advisory Committee Meetings; Metals Assessment Panel

[Federal Register: July 15, 2002 (Volume 67, Number 135)]
[Notices]
[Page 46505-46506]
From the Federal Register Online via GPO Access [wais.access.gpo.gov]
[DOCID:fr15jy02-60]

ENVIRONMENTAL PROTECTION AGENCY [FRL-7245-4]

EPA Science Advisory Board, Notification of Public Advisory Committee Meetings; Metals Assessment Panel

Pursuant to the Federal Advisory Committee Act, Public Law 92-463, notice is hereby given of three conference call meetings of Metals Assessment Panel of the US EPA Science Advisory Board (SAB). These conference call meetings are preparatory for a face-to-face meeting to be held September 10-12 in or near Washington DC. Once the location is known, the face-to-face meeting will be the subject of a separate announcement. The Panel will hold conference calls on the dates and times noted below. All times noted are Eastern Time. All meetings are open to the public, however, seating is limited and available on a first come basis. For teleconference meetings, available lines may also be limited.

Important Notice: Documents that are the subject of SAB reviews are normally available from the originating EPA office and are not available from the SAB Office--information concerning availability of documents from the relevant Program Office is included below.

Background

The EPA Science Advisory Board (SAB, Board) announced in 67 FR 38957-38959, June 6, 2002 that it had been asked to undertake a review of EPA's draft Action Plan for the ``Framework for Metals Assessment and Cross-Agency Guidance for Assessing Metals-Related Hazard and Risk.'' The background, charge, and description of the review documents appear in the above referenced Federal Register notice and are also available at the SAB website (www.epa.gov/sab). The notice also included a call for nominations for members of the panel in certain technical expertise areas needed to address the charge and described the process to be used in forming the panel. A Short List of individuals from which the panel will be chosen has been posted at the SAB's website.

The following three teleconference meetings will be hosted out of Conference Room 6013, USEPA, Ariel Rios Building North, 1200 Pennsylvania Avenue, NW, Washington,

DC 20004. The meetings are all open to the public, but, due to limited space, seating will be on a first-come basis. The SAB Staff encourages members of the public who plan to attend any or all of the three meetings in person to call a few days in advance of that meeting and to arrive at least 15 minutes before the scheduled start time so that the necessary building security requirements can be accommodated before the start of the meeting. The public may also attend the teleconference meetings via telephone, however, lines may be limited. For further information concerning the meetings or how to obtain the teleconference phone number, please contact the individuals listed at the end of this FR notice.

1. Metals Assessment Panel--August 8, 2002 Teleconference

The Metals Assessment Panel will meet on August 8, 2002 by teleconference from 2 p.m. to 4 p.m. Eastern Time. Purpose of the Meeting--The purpose of this public teleconference meeting is to: (a) Discuss the charge and review materials provided to the Metals Assessment Panel; (b) to clarify any questions relating to the charge and the review materials; (c) to discuss specific charge assignments to the panelists; and (d) to clarify specific points of interest raised by the Panelists in preparation for the face-to-face meeting to be held on September 10-12, 2002.

See below for availability of review materials, the charge to the review panel, and contact information.

2. Metals Assessment Panel--August 15, 2002 Teleconference

The Metals Assessment Panel will meet on August 15, 2002 by teleconference from 2 p.m. to 4 p.m. Eastern Time. Purpose of the Meeting--The purpose of this public teleconference meeting is to: (a) Hear invited presentations; (b) to hear public comment; (c) to provide an opportunity for panel discussion; and (d) to identify areas where the Panel would welcome additional input. See below for availability of review materials, the charge to the review panel, and contact information.

3. Metals Assessment Panel--August 29, 2002 Teleconference

The Metals Assessment Panel will meet on August 29, 2002 by teleconference from 2 p.m. to 4 p.m. Eastern Time. Purpose of the Meeting--The purpose of this public teleconference meeting is to: (a) Allow panelists to identify points they think should be addressed in the Panel's report; (b) provide other panelists with an opportunity to add to or correct those points; and (c) identify for the Agency and the Public any areas where the panel would welcome additional information or comment.

See below for availability of review materials, the charge to the review panel, and contact information.

FOR FURTHER INFORMATION CONTACT: Persons desiring information about public participation in the meetings identified above must contact Kathleen White, Designated Federal Officer, Metals Assessment Panel, USEPA Science Advisory Board (1400A), Suite 6450Z, 1200 Pennsylvania Avenue, NW, Washington, DC 20460; telephone/voice mail at (202) 564-4559; fax at (202) 501-0582; or via e-mail at white.kathleen@epa.gov.
Requests for oral comments must be made in writing (e-mail, fax or mail) and received by Ms. White no later than noon Eastern Time on the following dates: for the August 8 teleconference call, requests must be received by August 1st; for the August 15 teleconference call, requests must be received by August 8; for the August 29 conference call, requests must be received by August 22.

The public is encouraged to provide written comments. Those who prefer to provide oral comments are encouraged to schedule them for August 15. The oral public comment period will be limited and divided among the speakers who register. Additional opportunities for public comment will be available at the face to face meeting to be held September 10-12. Registration is on a first come basis. Speakers who have been granted time on the agenda may not yield their time to other speakers. Speakers who are unable to register in time may provide their comments in writing.

Members of the public desiring additional information about the meeting locations or the call-in number for the teleconference before June 30, 2002, must contact Ms.Zisa Lubarov-Walton, Management Assistant, EPA
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Science Advisory Board (1400A), Suite 6450N, U.S. EPA, 1200 Pennsylvania Avenue, NW, Washington, DC 20460; telephone/voice mail at (202) 564-4537; fax at (202) 501-0582; or via e-mail at lubarov-walton.zisa@epa.gov A copy of the draft agenda for each meeting will be posted on the SAB Website (www.epa.gov/sab) (under the AGENDAS subheading) approximately 10 days before that meeting.
Availability of Review Material--There is one primary document that is the subject of the review. The draft Metals Action Plan is available on the EPA Risk Assessment Forum's website: http://www.epa.gov/ncea/raf/rafpub.htm. The review document is also available electronically at the following
sitehttp://oaspub.epa.gov/eims/eimscomm.getfile?p_
download_id=4580 For questions and information pertaining to the review documents, please contact Dr. Bill Wood (Mail Code 8601D), U.S. Environmental Protection Agency, Washington, DC 20460; tel. (202) 564-3358, e-mail: wood.bill@epa.gov. Dr. Wood will refer you to the appropriate contact for the particular issue of interest.

Providing Oral or Written Comments at SAB Meetings

It is the policy of the EPA Science Advisory Board to accept written public comments of any length, and to accommodate oral public comments whenever possible. The EPA Science Advisory Board expects that public statements presented at its meetings will not be repetitive of previously submitted oral or written statements.

Oral Comments: In general, each individual or group requesting an oral presentation at a face-to-face meeting will be limited to a total time of ten minutes (unless otherwise indicated). For teleconference meetings, opportunities for oral comment will usually be limited to no more than three minutes per speaker and no more than fifteen minutes total. Deadlines for getting on the public speaker list for a meeting are given above. Speakers should bring at least 35 copies of their comments and presentation slides for distribution to the reviewers and public at the meeting.

Written Comments: Although the SAB accepts written comments until the date of the meeting (unless otherwise stated), written comments should be received in the SAB Staff Office at least one week prior to the meeting date so that the comments may be made available to the review panel for their consideration. Comments should be supplied to the appropriate DFO at the address/contact information noted above in the following formats: one hard copy with original signature, and one electronic copy via e-mail (acceptable file format: Adobe Acrobat, WordPerfect, Word, or Rich Text files (in IBM-PC/Windows 95/98 format). Those providing written comments and who attend the meeting are also asked to bring 35 copies of their comments for public distribution.

Meeting Access--Individuals requiring special accommodation at this meeting, including wheelchair access to the conference room, should contact Ms. White at least five business days prior to the meeting so that appropriate arrangements can be made.

General Information--Additional information concerning the Science Advisory Board, its structure, function, and composition, may be found on the SAB Website (http://www.epa.gov/sab) and in the Science Advisory Board FY2001 Annual Staff Report which is available from the SAB Publications Staff at (202) 564-4533 or via fax at (202) 501-0256.

Dated: July 9, 2002.
Robert Flaak,
Acting Deputy Director, EPA Science Advisory Board.
[FR Doc. 02-17691 Filed 7-12-02; 8:45 am]
BILLING CODE 6560-50-P

Attachment 2 Agenda

SCIENCE ADVISORY BOARD - METALS ASSESSMENT PANEL
CONFERENCE CALL MEETING
August 15, 2002
Room 6013 Ariel Rios Building, 1200 Pennsylvania Avenue NW
Washington DC
Final Agenda (as of August 14)

2:00	Mechanics of Call, Calling the Roll	Kathleen White, DFO
2:05	Opening Remarks	Valerie Thomas, Chair

Informational Presentations Invited by the Panel

2:10 Form and Fate of Metals in Aquatic Environments as They Relate to Metals Risk Assessment.

Sam Luoma, Senior Research Hydrologist USGS and Lead Scientist,
CALFED Bay-Delta Program, Sacramento, CA (calling from the field)

2:25 Context from the Industrial Perspective, International Implications, and Possible Changes in Science to Support Assessments

Bill Adams, Principal Environmental Scientist for Rio Tinto

2:40 History of Development of Knowledge of Lead's Effects on Health

Herbert Needleman, Professor of Psychiatry and Pediatrics
School of Medicine, University of Pittsburgh

2:50 Informing Risk Assessment with Recent information on Mechanisms

Joshua Hamilton, Associate Professor of Pharmacology and Toxicology and
Director of Dartmouth Center for Environmental Health Sciences

3:05 The Agency's Quality System and OMB Quality Guidelines on Information Quality as they relate to the Draft Action Plan

John Maney, President of Environmental Measurements Assessment

3:20 Organization of the Panel's Work and Practicalities Valerie Thomas, chair

4:00 (or earlier) Adjourn

NOTE: No time for public comment has been requested as of August 14.

Attachment 3 Committee Roster

U.S. Environmental Protection Agency
Science Advisory Board
Executive Committee
Metals Assessment Panel*

CHAIR

Dr. Valerie Thomas, Research Scientist, , Princeton Environmental Institute, Guyot Hall Room 28, Princeton, NJ
Also Member: Environmental Engineering Committee

OTHER SAB MEMBERS

Dr. Charles A. Pittinger, Director of Environmental Research and Program Manager, SoBran, Incorporated, Cincinnati, OH
Member: Ecological Processes and Effects Committee

CONSULTANTS

Dr. Max Costa, Professor and Chairman, Department of Environmental Medicine, School of Medicine, New York University, New York, NY

Dr. Bruce Fowler, Professor of Epidemiology and Toxicology, University of Maryland Program in Toxicology, University of Maryland , Baltimore, MD

Dr. Andrew Friedland, Professor, Environmental Studies Program, Dartmouth College, Hanover, NH

Dr. Kim Hayes, Associate Professor of Environmental Engineering, Department of Civil and Environmental Engineering, University of Michigan, Ann Arbor, MI

Dr. Mary Kay O'Rourke, Associate Professor of Public Health Research & Medicine, College of Public Health, University of Arizona

Dr. Nga L. Tran, Senior Managing Scientist, Exponent/AKA Novigen Sciences, Washington, DC

Dr. Bernard Weiss, Professor, Department of Environmental Medicine, University of Rochester Medical Center, Rochester, NY

Dr. Herbert L. Windom, Professor, Skidaway Institute of Oceanography, Savannah, GA

SCIENCE ADVISORY BOARD STAFF

* Members of this SAB Panel consist of

a. SAB Members: Experts appointed by the Administrator to serve on one of the SAB Standing Committees.

b. SAB Consultants: Experts appointed by the SAB Staff Director to a one-year term to serve on ad hoc Panels formed to address a particular issue.

c. Liaisons: Members of other Federal Advisory Committees who are not Members or Consultants of the Board.

d. Federal Experts: The SAB charter precludes Federal employees from being Members of the Board. "Federal Experts" are federal employees who have technical knowledge and expertise relevant to the subject matter under review or study by a particular panel.